

SEQUENCE LISTING

<110> Fisher, Paul B.

<120> Genes Displaying Enhanced Expression During
Cellular Senescence and Terminal Cell
Differentiation and Uses Thereof

<130> 0575/56765

<140> WIPO ST. 10/C

<141> 1999-02-03

<160> 50

<170> PatentIn Ver. 2.0

<210> 1

<211> 674

<212> DNA

<213> Homo sapien

<400> 1

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<211> 678

<212> DNA

<213> Homo sapien

<400> 2

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<210> 3
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<212> DNA
<213> Homo sapien

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<210> 4
<211> 675
<212> DNA
<213> Homo sapien

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<400> 4
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agccagcggt ggtggctggc acctgtagtc ccagctactt gggagctgan gcangagaat 540
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675

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<210> 5
<211> 460
<212> DNA

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<213> Homo sapien

<400> 5

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<210> 6

<211> 445

<212> DNA

<213> Homo sapien

<400> 6

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gagatgtctg tgccagggca tgaggacagc aatggttgta tcaactatga agagctcgtc 240
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<210> 7

<211> 666

<212> DNA

<213> Homo sapien

<400> 7

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ttttgcccag tatatgatag tctgtctgat ggtttgggta ttgggcagac atatcttcat 600
taagagtttt tggaaaactc atcaaatctg atgaatacat ttcttccata acccaattgga 660
aatatc 666
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<210> 8

<211> 409

<212> DNA

<213> Homo sapien

<400> 8

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aagcccccac tcgtataata attacatcac aagacgtctt gcactcatga gctgtcccca 180
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<210> 9

<211> 667

<212> DNA

<213> Homo sapien

<400> 9

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<210> 10

<211> 672

<212> DNA

<213> Homo sapien

<400> 10

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acatgggaaa ag

672

<210> 11

<211> 672

<212> DNA

<213> Homo sapien

<400> 11

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acatgggaaa ag 672

<210> 12

<211> 669

<212> DNA

<213> Homo sapien

<400> 12

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tntgggata 669

<210> 13

<211> 702

<212> DNA

<213> Homo sapien

<400> 13

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aagacaagaa aattaatgaa gaactggagt ctcaatatca gcaaaagtatg gacagtaaat 120

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ataaaaatag aaatanttcc agtactcact tccttctatt agcactctcac cctntaatcc 660
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<210> 14

<211> 312

<212> DNA

<213> Homo sapien

<400> 14

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tggtgtctgca ccagcaggag gtccctgcccc ctccactgct gctgctccag ctgaggagaa 180
gaaagtggaa gcaaaagaaag aagaatccga ggagtctgat gatgacatgg gctttggctc 240
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aaaaaaaaaa ac 312

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<210> 15

<211> 391

<212> DNA

<213> Homo sapien

<400> 15

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cctcggaaga gactctgcat ggagctctgc aattctactt ctttagaaaa catgttcacg 300
agcagttggt agagttaaat ccgagaatca aacagagtaa ccagaactcg aggggggggc 360
cgttacccaa ttgcgccctat agtgagtcgt t 391

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<210> 16

<211> 720

<212> DNA

<213> Homo sapien

<400> 16

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ccatcttgag gatgtagggg attatgctgt ctatcgaaac attgccaatg agaccagtaa 180
aaaaaagttc ttctgttatg ttggagctca tcagcctgag tgccggcgag cgaaacagga 240

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tccggggccaa tctataaaa ggagtgtcat tagaaaagga gactgtttga tgcccttcaa 300
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ntnccaaacc tgtnttttct gncccnngaa aanaactccc ntgcacatat gctcaataaa 660
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<210> 17

<211> 205

<212> DNA

<213> Homo sapien

<400> 17

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cagcattccc cctcaaacct aaaaaaaaaa aaaaaaannt ngnggggggg cccgggcccc 180
anttcnccnt ntngggngnn gnntt 205

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<210> 18

<211> 691

<212> DNA

<213> Homo sapien

<400> 18

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catggatctg gtagggggaa aatgtgtatt ttattacatc tttcacattg gctattttaa 180
gacaaagaca aattctgttt ctgagaaga gaataattagc tttactgttt gttatggcct 240
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ctgacaactt gaataataca ccagagataa tatgagaatc agatcatttc aaaactcatt 600
tctatgttaa ctgcattgag aactgcatat gtttcgctga tatatggggg tttccatttg 660
cgaatgggtc cattctctct cgggactttt t 691

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<210> 19

<211> 483

<212> DNA

<213> Homo sapien

<400> 19

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aattgatctg tgatcaataa tactaatatg ttatctttta ccgtattctg cctctcacta 120
ttgattttaa ttagttagga gtatttgagc tgttatttct tgagcttaat attttttttg 180

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agttaactct ttaaggagat aatcatggct gtagacaagg ccaggcgctgg ctgacgtgcc 240
ttagaaagtt tgaatgcaat aaagcgggtg ttggcggtct cctgcattgt agtgcggggt 300
acaaatgcta attgttcctt caactgggtg cagcagatga gccgccacct acagacggct 360
actgccagg gacctgccca ggccccaccc aagggtctcc aagggttgag atttctgcag 420
acctatagcc agcacactta gtcttgcctt atatagagtt cctcttcggg aagcttttga 480
taa 483

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<210> 20
<211> 589
<212> DNA
<213> Homo sapien

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<400> 20
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ctcccgctggg atttcaggga atttgaagta gaaaaacaga ctgcagaaga aacgggggctt 180
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gaaattgaaa tgaatgaag tgacatgatg ttagagacat ctatgtcaga ccacagcacg 300
tgactccagt cagtggctct ggccccactg tcccagtgta ggttagtatt ccttaacatc 360
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attctctgaa cctacaaaaa agttatacat agtggaataa agaaggtaaa ccatcaaaaa 540
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<210> 21
<211> 713
<212> DNA
<213> Homo sapien

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<400> 21
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aagatacata gctagaagcg acgggtacaa aaagcaatgt gtacaagaag actttcacga 120
agtatacaga gagttcacct ctactctgcc ctctctatag tcataatgta gcaagtaaaag 180
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gtgtgaaaaa ataaatgttc caccagtagg gataggggaa aagtaacca aagagagaaa 300
gagaaaggaa tgctgggttta tctttgtaga ttgtaatcga atggagaaat ttgcagtatt 360
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<210> 22
<211> 480
<212> DNA
<213> Homo sapien

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<400> 22
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 tgagatggag cgctctttac atgatgcact ttgtgtagtg aagagagttt tggagtcaaa 180
 atctgtgggt cccgggtggg gtgctgtaga agcagccctt tccatatacc ttgaaaacta 240
 tgcaaccagc atgggggtctc gggaacagct tgcgattgca gagtttgcaa gatcactctc 300
 tgttattccc aatacactag cagttaatgc tgcccaggac tccacagatc tgggtgcaaa 360
 attaagagct ttccataatg agggccaggt taaccagaa cgtaaaaatc taaaatgatt 420
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<210> 23

<211> 198

<212> DNA

<213> Homo sapien

<400> 23
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 tcttttgttta acaaacccatg catttaagtt taagtgaagt caacaaaaag gaaatagggtg 120
 tatggatatg tgattttgag attaaagtta gtcttaaaat gtaaaaaaaa aaaaaaaaaa 180
 aaaaaaaaaa aaaaaaaaaa 198

<210> 24

<211> 414

<212> DNA

<213> Homo sapien

<400> 24
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 agtgaagggt aagaaaagaaa cggatgaactc cccagctatt tataaaattc agagtgcgtcg 180
 aaaaacgttga cgtgttatag ataagccttg tcattctgta tcaaaaaatct gttgtcgttt 240
 tctagttaact tcaaatccca ttactccaaa tggcatgggt ttccgggttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatggacaa cattaaatct ccctcccttc 360
 tgtagaanan anannnnaaa aancncncng gggggggccg ggtccccatt cccc 414

<210> 25

<211> 367

<212> DNA

<213> Homo sapien

<400> 25
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 agtgaagggt aagaaaagaaa cggatgaactc cccagctatt tataaaattc agagtgcgtcg 180
 aaaaacgttga cgtgttatag ataagccttg tcattctgta tcaaaaaatct gttgtcgttt 240
 tctagtaact tcaaatccca ttactccaaa tggcatgggt ttccgggttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatgggaca acattaaatc tccctcccttc 360
 cgtgtaa 367

<210> 26
 <211> 432
 <212> DNA
 <213> Homo sapien

<400> 26
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 gtagtataaat gaattcttca aaggtttccc aaaccactcc ttatgatcca gtgaatattc 180
 aagagagcta catttgaagc ctgtacaaaa gcttatccct gtaacacatg tgcataata 240
 tacaaacttc tactttcgtc agtccttaac atctacctct ctgaattttc atgaatttct 300
 atttcacaag ggttaattgt ttatatcac tggcagcagc atacaataaa acttagtatg 360
 aaactttaaa aaaaaaaaaa aaaacntcnn ggggggnccc ggancccant tcnctntata 420
 gggngnccgn tt 432

<210> 27
 <211> 398
 <212> DNA
 <213> Homo sapien

<400> 27
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 aacttcgcga aatgcctaga tattatccta ctgaagatgt gcctcgaaaag ctggtgagcc 120
 acggcaaaaa acccttcagt cagcacgtga gaaaactcgg agccagcatt acccccggga 180
 ccattctgat catcctcact ggacgccaca ggggcaagag ggtggttttc ctgaagcagc 240
 tggctagtgg ctattactt gtgactggac ctctggtcct caatcgant cctctacnaa 300
 gaacacacca gaaatttgtc attgccactt caaccaaagt cgatntcngc antgtannaa 360
 atcccaanac atcttactga tgettacttc aagatgaa 398

<210> 28
 <211> 232
 <212> DNA
 <213> Homo sapien

<400> 28
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 ctgctgtgat actgagtttt ctaaacagca taaggaagac ttgctccctt gtcctatgaa 120
 agagaatagt tttggagggg agaagtggga caaaaaagat gcagttttcc ttgtatttgg 180
 gaaatgtgaa aataaaattg tcaactcttt caaaaaaaaaa aaaaaaaaaa aa 232

<210> 29
 <211> 539
 <212> DNA
 <213> Homo sapien

<400> 29
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 cagcaggctt accaggaagc atttgaaatt agtaagaaag aaatgcagcg tacacaccca 180
 attctgtcttg gtctggcact aaatttctca gtcttttact atgagattct aaactctcct 240
 gaaaaggcct gtgacctggc aaaaacggca tttgatgaag caattgctga attggatagc 300
 ctgaatgaag agtcttataa agacagcact ctgatcatgc agttacttag ggacaattca 360
 ctctgtggac atcggaaaac cagggagacg aaggagacgc tggggaggga gagaactaat 420
 gtttctcgtg ctttgtgatc tgttcagtgt cactctgtac cctcaacata tatcccttgt 480
 gcgataaaaa aaaaanaaaa aaaaacntc ngggggggcc ccggancccn attccccct 539

<210> 30

<211> 568

<212> DNA

<213> Homo sapien

<400> 30

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 tttacatttg ttcttctagg gaatgtatgc atctctatat atattttccc tctcaaaacc 120
 agaacatcaa cagtgtctgt tctgacactt cagacatccc acgcaaagcc acattgaatt 180
 tttgccaaat gaaaaacaca tccacaatca agttctaaag ggggtgtcaag tggggaatat 240
 taatattggt tattattcaa aaatttagtt tatnaaaang aancaaaacc nttgaacctt 300
 tttcccnaa aaanaaggaa aatntnntgt ngaccaaggg ncgaacctga atccncttgg 360
 aaaaattggt ntctcagaaa ggaaaagcgc cctccagttc tttacccca agaatttana 420
 aaaatttggt ccaagatttt atatgttcag ttgtttatgt ntaaaaaataa cttcttggtat 480
 tttgtggggg aggaccggaa aagggaaggga gtttattcct atgttatata ntanaaaact 540
 ccccnataaa atgccatnga tgggttga 568

<210> 31

<211> 315

<212> DNA

<213> Homo sapien

<220>

<223> Human sapien

<400> 31

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 ccaaaaaagg aggtggctct aagtaaaact gggattggac agtagtggtg catctggtcc 120
 ttgccgcttg agagccccaag gagacatcgg cttagtgtag catggctatg ctcccgctcg 180
 gaagatgccca gcatctggcc tccactgttt ttcagctgtg tccccagctc cgtgtctttt 240
 tagaatgtga atgatgataa agttgtgaaa taaaggtttc tatctagtgt gtaaaaaaaa 300
 aaaaaaaaaa aaaaa 315

<210> 32

<211> 458

<212> DNA

<213> Homo sapien

<400> 32

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aattcaagga actttacatt gtaagagaaa acaaaacact gcaaaagaag tgtgccgact 60
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acaaaggcct agatttgctt tgtctcaaaa taaggaattt tgtagtgggt ttcaaaaaata 180
attcaacaaa gaaacaatac aaaaagtggg tagaattacc tatcacattt cccaatcttg 240
actattcaga atgctgttta tttagtgtat aggattagca cttgattgaa gattcttcta 300
aaatactatc agttaaacat ttaatatgat tatgattaat gnattcatta tgctncagac 360
tgacntanga atcantaaaa ngatngtttt actctgcaaa aaaaaaaaaa aancnggggg 420
ggggcccgcc cccaatttcc ccttntgggg ggggggtt 458

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<210> 33
<211> 470
<212> DNA
<213> Homo sapien

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<400> 33
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aaagatcaga ttagttttat ttgttcactt acgtgctttg attatccccct ctgaattata 120
gaccgagctt tgttggttag cctaagagaa gatttatgta gtaatttctt ctccaggtatg 180
gaaccacggt cataactaac atgttgccca gaatagaacc actggttaaa catattttat 240
tcaccattaa gtgatcttta tcaattattct ggatttagaca acaaaattacc tttctgggtg 300
ttctctgtaa actatactcc tgtttgaatg ttaaaccttg ttgctaaagt ttaattttaa 360
gatgtttgaa tgttcagttt atgtatttga actacaataa accaacccct tttatataaa 420
aaaaaaaaa aacntcgagg gggggcccg cccaatttnn ccctataggg 470

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<210> 34
<211> 261
<212> DNA
<213> Homo sapien

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<400> 34
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attttctcagt gtttgcattt cagactgtct aaatacagca tgtgacaagc tgaagaagcc 180
aaatctagca gtcatttctg atttctattt attctcccc tcttctctgt aaaaagacaa 240
aaaaaaaaa aaaaaaaaaa a
261

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<210> 35
<211> 309
<212> DNA
<213> Homo sapien

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<400> 35
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tcctgattggt ggccctagcta tggcttgcca tgactccttc ctcaaggctg tcccttccca 120
gaagcggacc tgaggacccc ttggcccttg ccttcaaaac caccctcttt ccttcagcc 180
ttctgtgcat catctccaca gccaccccat cccctgagca cactaacacc ctcatgcagg 240
ccccacctgc caatagtaat aaagcaatgt cactttttta aaactatgaaa aaaaaaaaaa 300
aaaaaaaaa
309

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<210> 36
 <211> 243
 <212> DNA
 <213> Homo sapien

<400> 36
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 tgctctgctc gcagttccct ttgggttcca tgttttcctt gtccctccc atgcctagct 180
 ggattgcaga gtttaagttta tgattatgaa ataaaaacta aataacaaaa aaaaaaaaaa 240
 aaa 243

<210> 37
 <211> 650
 <212> DNA
 <213> Homo sapien

<400> 37
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 cacaagcccc ttctggaaaag gatgcagaaa agaccccgag agtttagcatt tcttgttttag 180
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 tttgtaagaa cataatggga ctgcataaca gagttctata ttacaatttt gtgattatta 480
 gtacacagta cagctatgct gtgactgttt tggaaagcca gttttaacac tatgttatcat 540
 ttttgnttaa agnaagttta acccttatata acntaatgac atttgatttc tggattttcc 600
 catgataaaa aatttaggggg gataaataaa aatggttact ggaattttcaa 650

<210> 38
 <211> 687
 <212> DNA
 <213> Homo sapien

<400> 38
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 catacatgca gttaaatccc ttatgcaaa tgtgacactg ctttactagg ctttttagtt 420
 attttattat tttttttttt ttgnccantt nattttttan nntaatnct naaacnctt 480
 attttttttt aaaaaataaa aacacnactn tttnttttta ananttaaac cttantaaat 540
 ttttccccc aaaaaaaatc cctaannntt ttnaattntt tgaattnaaa annaantaaa 600
 cttttttnaa aacnngcga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 660

<210> 39
 <211> 2549
 <212> DNA
 <213> Homo sapien

<400> 39
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 ctatggagta gcgcagggtc tcgagctgtg gccgtggact taggcaacag gaaattagaa 120
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aatataaata ctttttaatt atttgtacta aaatgctcat ttacatgtgc ctttttttta 2460
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<210> 40

<211> 649

<212> DNA

<213> Homo sapien

<400> 40

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 aacaagcttc agtggcaaaa aaggagatat tacagatcat gaacaaaact atttcaaaac 180
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 aacgagcaaa attttgttga cctgggtggct ataacttaaa aaaacttcag gctgaaacag 300
 gtgtaaactat tagtcagggtg gatgaagaaa cgttttgtat ttgcaccaac acccagtggt 360
 atgcatgagg caagaagact tcattactga atctgcaagg atgatcagga gcagcaatta 420
 gaattttggag cagtatatat cgccacaata actgaaatca gagatactgg tgtaattgga 480
 aaattatatc caaatatgac tgcgggtactg cttcataaca cacaacttga taacgaaga 540
 ttaaacatcc tactgcctta ggattagaag ttggccaaga aattcagggtg aaatactttg 600
 gactgtgacc cagccgatgg aagaatgagg ctttctcgaa aagtgtcttc 649

<210> 41

<211> 638

<212> DNA

<213> mouse

<400> 41

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 gtggcacaaga aggagatact gcagataatg aacaaacgat ttcaaaaacct cgagcatcaa 180
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 tcggtggggc tgggtgatat cacttaaaaa aactccaggc tgagacaggt gtaacaatta 300
 gtcagggttga tgaagaatac ttctccatat ttgcaccaac acctactgca atgcatgaa 360
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 cagttttatc cgcgacaata actgaaatca gagacactgg agtgatggtg aaactgtatc 480
 caaacatgac tgcagtgctg cttcataatt cacaacttga ccaacgaaag attaaacatc 540
 ccactgccct aggactagag gtggccaaga aattcaggtc aaatactttg gccgtgatcc 600
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<210> 42

<211> 705

<212> PRT

<213> Homo sapien

<400> 42

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1

5

10

15

Gln Val Arg Ala Leu Trp Ser Ser Ala Gly Ser Arg Ala Val Ala Val
 20 25 30

Asp Leu Gly Asn Arg Lys Leu Glu Ile Ser Ser Gly Lys Leu Ala Arg
 35 40 45

Phe Ala Asp Gly Ser Ala Val Val Gln Ser Gly Asp Thr Ala Val Met
 50 55 60

Val Thr Ala Val Ser Lys Thr Lys Pro Ser Pro Ser Gln Phe Met Pro
 65 70 75 80

Leu Val Val Asp Tyr Arg Gln Lys Ala Ala Ala Gly Arg Ile Pro
 85 90 95

Thr Asn Tyr Leu Arg Arg Glu Val Gly Thr Ser Asp Lys Glu Ile Leu
 100 105 110

Thr Ser Arg Ile Ile Asp Arg Ser Ile Arg Pro Leu Phe Pro Ala Gly
 115 120 125

Tyr Phe Tyr Asp Thr Gln Val Leu Cys Asn Leu Leu Ala Val Asp Gly
 130 135 140

Val Asn Glu Pro Asp Val Leu Ala Ile Asn Gly Ala Ser Val Ala Leu
 145 150 155 160

Ser Leu Ser Asp Ile Pro Trp Asn Gly Pro Val Gly Ala Val Arg Ile
 165 170 175

Gly Ile Ile Asp Gly Glu Tyr Val Val Asn Pro Thr Arg Lys Glu Met
 180 185 190

Ser Ser Ser Thr Leu Asn Leu Val Val Ala Gly Ala Pro Lys Ser Gln
 195 200 205

Ile Val Met Leu Glu Ala Ser Ala Glu Asn Ile Leu Gln Gln Asp Phe
 210 215 220

Cys His Ala Ile Lys Val Gly Val Lys Tyr Thr Gln Gln Ile Ile Gln
 225 230 235 240

Gly Ile Gln Gln Leu Val Lys Glu Thr Gly Val Thr Lys Arg Thr Pro
 245 250 255

Gln Lys Leu Phe Thr Pro Ser Pro Glu Ile Val Lys Tyr Thr His Lys
 260 265 270

Leu Ala Met Glu Arg Leu Tyr Ala Val Phe Thr Asp Tyr Glu His Asp
 275 280 285
 Lys Val Ser Arg Asp Glu Ala Val Asn Lys Ile Arg Leu Asp Thr Glu
 290 295 300
 Glu Gln Leu Lys Glu Lys Phe Pro Glu Ala Asp Pro Tyr Glu Ile Ile
 305 310 315 320
 Glu Ser Phe Asn Val Val Ala Lys Glu Val Phe Arg Ser Ile Val Leu
 325 330 335
 Asn Glu Tyr Lys Arg Cys Asp Gly Arg Asp Leu Thr Ser Leu Arg Asn
 340 345 350
 Val Ser Cys Glu Val Asp Met Phe Lys Thr Leu His Gly Ser Ala Leu
 355 360 365
 Phe Gln Arg Gly Gln Thr Gln Val Leu Cys Thr Val Thr Phe Asp Ser
 370 375 380
 Leu Glu Ser Gly Ile Lys Ser Asp Gln Val Ile Thr Ala Ile Asn Gly
 385 390 395 400
 Ile Lys Asp Lys Asn Phe Met Leu His Tyr Glu Phe Pro Pro Tyr Ala
 405 410 415
 Thr Asn Glu Ile Gly Lys Val Thr Gly Leu Asn Arg Arg Glu Leu Gly
 420 425 430
 His Gly Ala Leu Ala Glu Lys Ala Leu Tyr Pro Val Ile Pro Arg Asp
 435 440 445
 Phe Pro Phe Thr Ile Arg Val Thr Ser Glu Val Leu Glu Ser Asn Gly
 450 455 460
 Ser Ser Ser Met Ala Ser Ala Cys Gly Gly Ser Leu Ala Leu Met Asp
 465 470 475 480
 Ser Gly Val Pro Ile Ser Ser Ala Val Ala Gly Val Ala Ile Gly Leu
 485 490 495
 Val Thr Lys Thr Asp Pro Glu Lys Gly Glu Ile Glu Asp Tyr Arg Leu
 500 505 510
 Leu Thr Asp Ile Leu Gly Ile Glu Asp Tyr Asn Gly Asp Met Asp Phe
 515 520 525

Lys Ile Ala Gly Thr Asn Lys Gly Ile Thr Ala Leu Gln Ala Asp Ile
530 535 540

Lys Leu Pro Gly Ile Pro Ile Lys Ile Val Met Glu Ala Ile Gln Gln
545 550 555 560

Ala Ser Val Ala Lys Lys Glu Ile Leu Gln Ile Met Asn Lys Thr Ile
565 570 575

Ser Lys Pro Arg Ala Ser Arg Lys Glu Asn Gly Pro Val Val Glu Thr
580 585 590

Val Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly
595 600 605

Tyr Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln
610 615 620

Val Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met
625 630 635 640

His Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu
645 650 655

Gln Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile
660 665 670

Arg Asp Thr Gly Val Met Val Lys Leu Tyr Pro Asn Met Thr Ala Val
675 680 685

Leu Leu His Asn Thr Gln Leu Asp Asn Glu Arg Leu Asn Ile Leu Leu
690 695 700

Pro
705

<210> 43
<211> 665
<212> PRT
<213> Homo sapien

<400> 43
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1 5 10 15

Leu Thr Leu Thr Val Asn Tyr Glu Glu Arg Leu Tyr Ala Val Gly Lys

275
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545 550 555
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565 570 575
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580 585 590
Ile Gln Lys Phe Gly Ala Phe Val Gln Ile Phe Ser Gly Lys Asp Gly
595 600 605
Leu Val His Ile Ser Gln Leu Ala Leu Gln Arg Val Gly Lys Val Gln
610 615 620
Asp Val Val Lys Ile Gly Asp Gln Ile Leu Val Lys Val Thr Gln Ile
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Gln Lys Gln Lys Gln Gln Ser
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35 40 45
Phe Ala Asp Gly Ser Ala Val Gln Ser Gly Asp Thr Ala Val Met
50 55 60
Val Thr Ala Val Ser Lys Thr Lys Pro Ser Pro Ser Gln Phe Met Pro
65 70 75 80
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Glu Tyr Lys Arg Cys Asp Gly Arg Asp Leu Thr Ser Leu Arg Asn Val
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Ser Cys Glu Val Asp Met Phe Lys Thr Leu His Gly Ser Ala Leu Phe
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Gln Arg Gly Gln Thr Gln Val Leu Cys Thr Val Thr Phe Asp Ser Leu
 370 375 380

Glu Ser Gly Ile Lys Ser Asp Gln Val Ile Thr Ala Ile Asn Gly Ile
 385 390 395 400

Lys Asp Lys Asn Phe Met Leu His Tyr Glu Phe Pro Pro Tyr Ala Thr
 405 410 415

Asn Glu Ile Gly Lys Val Thr Gly Leu Asn Arg Arg Glu Leu Gly His
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Gly Ala Leu Ala Glu Lys Ala Leu Tyr Pro Val Ile Pro Arg Asp Phe
 435 440 445

Pro Phe Thr Ile Arg Val Thr Ser Glu Val Leu Glu Ser Asn Gly Ser
 450 455 460

Ser Ser Met Ala Ser Ala Cys Gly Gly Ser Leu Ala Leu Met Asp Ser
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Gly Val Pro Ile Ser Ser Ala Val Ala Gly Val Ala Ile Gly Leu Val
 485 490 495

Thr Lys Thr Asp Pro Glu Lys Gly Glu Ile Glu Asp Tyr Arg Leu Leu
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Thr Asp Ile Leu Gly Ile Glu Asp Tyr Asn Gly Asp Met Asp Phe Lys
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Ile Ala Gly Thr Asn Lys Gly Ile Thr Ala Leu Gln Ala Asp Ile Lys
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Leu Pro Gly Ile Pro Ile Lys Ile Val Met Glu Ala Ile Gln Gln Ala
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Ser Val Ala Lys Lys Glu Ile Leu Gln Ile Met Asn Lys Thr Ile Ser
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Lys Pro Arg Ala Ser Arg Lys Glu Asn Gly Pro Val Val Glu Thr Val
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Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly Tyr
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Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln Val
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Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met His
625 630 635 640

Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu Gln
645 650 655

Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile Arg
660 665 670

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35 40 45

Ser Ala Leu Ser Ser Asp Ile Gly Pro Val Gly Ile Asp Asn Pro Thr
50 55 60

Ser Asn Leu Val Val Ala Gly Lys Ile Met Glu Ala Ala Ala Ile Gly
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Ile Val Gly Lys Lys Leu Phe Glu Leu Ala Glu Leu Glu Lys Glu Val
85 90 95

Glu Val Arg Ile Glu Arg Asp Gly Arg Arg Ser Glu Val His Gly Ser
 100 105 110
 Leu Phe Arg Gly Gln Thr Gln Leu Thr Leu Asp Lys Phe Met His Tyr
 115 120 125
 Phe Pro Glu Gly Gly Arg Arg Glu Gly His Gly Ala Leu Glu Ala Leu
 130 135 140
 Pro Val Ile Pro Asp Phe Pro Thr Arg Ser Glu Val Leu Glu Ser Asn
 145 150 155 160
 Gly Ser Ser Ala Ser Cys Leu Ala Met Asp Gly Val Pro Ile Val Ala
 165 170 175
 Gly Ala Gly Leu Val Glu Tyr Leu Thr Asp Ile Gly Glu Asp Gly Asp
 180 185 190
 Met Asp Phe Lys Ala Gly Thr Lys Gly Thr Ala Leu Gln Asp Ile Lys
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 Gly Ile Glu Ala Gln Gln Ala Glu Ile Leu Met Thr Ser Arg Pro Thr
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<212> RNA
<213> Homo sapien

<400> 50
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auuuuuuacag aaauuuuuu uuuuuuuu aagucuuuu uacauuuuag a 111